

intensity. When both these conditions are fulfilled the subjective symptoms in both conditions are remarkably similar and are present not only during the attack itself, but also after the attack has cleared up. The significance to be attached to this clinical observation lies in the following: It is often urged that a patient prone to attacks of angina pectoris will cease to have such attacks upon the onset of cardiovascular decompensation, but may again be the victim of their recurrence when the functional activities of the cardiovascular system have once more been restored to normal. The appearance of such precordial pain with its characteristic radiation during a prolonged attack of paroxysmal tachycardia shows that the contrary condition is, at times, also true, namely, that a person may be persistently free from precordial pain until cardiovascular decompensation (that is, with paroxysmal tachycardia) sets in, and then experience the precordial pain only when the cardiovascular decompensation has reached a certain intensity. Further, that such a person becomes and remains free from the precordial pain and its radiation so long as cardiovascular compensation is maintained.

Nor is an attack of paroxysmal tachycardia singular in this regard. A person without the necessary preliminary training, if he persists in severe physical effort, will develop not only a precordial pain with a sense of constriction across the chest, but also coincidentally an acute cardiac dilation with resultant cardiovascular insufficiency and fall in blood pressure.

A similar clinical paradox is seen, when one recalls the oft-repeated statement that patients suffering from angina pectoris cease to have attacks of precordial pain during the febrile state. It cannot be the febrile state alone that is operative in such cases because patients with acute pericarditis and fever not infrequently complain of an intense precordial pain, which pain with its direction of radiation is indistinguishable from that of angina pectoris.

It would therefore seem a fair assumption that the symptom of precordial pain with its customary direction of radiation is not to be looked upon as the sole criterion by which one may safely presume to evaluate either the nature of the condition calling forth the pain, the guide upon which one may safely rely with respect of therapy or the basis upon which one should rely in regard to prognosis.

A similar uncertainty exists in regard to the pain experienced at the apical region of the heart. Doctor Brown has referred to Mackenzie's clinical observations and his resultant opinion regarding the lack of significance to be attached to pain arising in this region. It is therefore perhaps not out of place to mention the work done upon the same symptom by Herz, and to recall that the latter author was able to show that such apical pain was only one symptom of a definite symptom complex, to which he gave the name phrenocardia.

The importance of Herz's work lies in the fact that he was able to definitely show that the apical pain in such patients was not of cardiac origin but arose from a painful spasm of the diaphragm localized in the apical region. Perhaps equally important was the further fact shown by Herz that most of the patients exhibiting this syndrome were women who ceased to be tormented by this pain upon the cessation of their sexual life. Herz's work, having withstood the test of reinvestigation, might be held as vindicating the viewpoint of those who do not attach too grave a significance to pain arising in the apical region.

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DOCTOR BROWN (closing).—The fact that blood pressure does frequently rise in an attack of angina pectoris is not generally considered of special importance, because nearly every writer on the subject admits that true attacks occur in which it does not rise. This has been our experience. Whether it rises or not may be due to the condition of the coronary arteries, since in true blocking it does not rise unless the throm-

bosis occurs in one of the smaller vessels in which case it may rise.

Admitting with Doctor Kaufman that Lewis is right and that symptoms essentially identical with those associated with true angina may occasionally occur in paroxysmal tachycardia, I can only state that in a large number of such cases, one of whom has had an average of one hundred attacks a year for fourteen years under my care, there has never been such a symptom. On the other hand one of our angina cases operated on later by sympathectomy had developed paroxysmal fibrillation coincident with the onset of angina. In other words the substance of what Doctor Bloomfield states underlies the whole study of heart pain. One must know as clearly as possible what the condition of the heart is, what excites the attacks, as well as what arrests them. Doctor Nuzum's reference to thrombosis is interesting especially in view of his careful and extensive study on that subject. We have had two patients with fusiform aneurysm of the descending aorta whose attacks of angina resemble coronary thrombosis. One was relieved by novocain injections in the paravertebral nerves.

THE LURE OF MEDICAL HISTORY

MARCUS AURELIUS SEVERINUS (1580-1656)

A Contemporary of Harvey, and Author of the First Work on Comparative Anatomy

By FREDERICK LEET REICHERT, M. D.

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LAST year the three hundredth anniversary of William Harvey's *De Motu Cordis* was celebrated. It might be of interest to consider a contemporary of Harvey, Marcus Aurelius Severinus, an Italian who abandoned law to study medicine under illustrious native masters, who taught anatomy and surgery, and who became a celebrated teacher and surgeon of Naples, writing extensively on a variety of subjects, but now being celebrated in the history of medicine as the author of the first comparative anatomy (*Zoötomia Democritae*, 1645). This work, though crude, antedated the writings of Malpighi, Leeuwenhoek, and Swammerdam.

THE SEVENTEENTH CENTURY, THE AGE OF SPECIALIZED ANATOMICAL RESEARCH

The dawn of modern anatomy in the sixteenth century, with the actual public dissections of the human body, and the publication of Vesalius' *Fabrica* in 1543, was followed in the seventeenth century by extensive specialized anatomical research. Quite naturally Severinus made anatomical investigations, but in his eagerness for research he utilized the more accessible bodies of animals. This research led to the publication of the *Zoötomia* in which the woodcuts show the viscera of birds, fishes, and mammals with some comparative phases of their development.

SEVERINUS, THE SURGEON

Both as an anatomist and as a surgeon, Marcus Aurelius Severinus was highly esteemed by the populace, and for a long time he filled the chair of anatomy and later was professor of surgery in the

University of Naples, where he yearly attracted a crowd of students to his lectures.

Garrison states that in comparison with the extensive development of anatomy in the seventeenth century, the literature of surgery in this century seems meager, and that among the Italians no surgeons are found commensurate in rank with those of the three centuries preceding; the only names deserving mention are Cesare Magati (1579-1673), Pietra de Marchetti (1579-1673), professor of Padua, and Giuseppi Zambecari, pupil of Redi and pioneer in experimental surgery.

HIS CRITICISM OF SURGEONS

Reading the preamble to his work on surgery, one would feel that Severinus deserved mention with Magati and Marchetti, for as the self-styled champion of heroic surgery he is depressed by the degradation and discredit of surgery in the seventeenth century, attributing the cause to the fatal separation of medicine and surgery and to the negligence of surgeons in the study of the nature of illnesses and their disdain for the lectures of the great masters, as well as to their almost complete ignorance of anatomy. He felt that surgery had been reduced to a miserable state of more or less timid maneuvers without regard to the surgeons' dignity or care for their reputation, and that they gave preference to medications over the use of decisive surgical methods and the actual cautery.

He complained of the cowardice of the people who refused to suffer the slightest pain, and he himself felt that pain is easily borne and that one should always be ready to suffer for the health and integrity of one's body. He insisted that active Herculean surgery was less dangerous and brought more glory than the "haphazard, effeminate and compromising" surgery. He objected to the absurd reasoning which prescribed against a virile surgery which had so long been abandoned.

One expects to find in this surgical work great operations, perhaps some that never before had been attempted, yet throughout the many chapters there are very few cases of major surgery, and we find with disappointment his frequent use of incision and the cautery, rather than excision, in the treatment of the tumors or the removal of foreign bodies and gangrenous areas.

TREATMENT OF ULCERS

However, the individual cases show that he was bold, daring, and boastful. In speaking of ulcers, he says, "As for one grounded in the teaching of Fallopius, Galen, and Aëtius, who warned that varices in connection with an ulcer will never thrombose however one may try, I have happily healed, contrary to all opinions, ulcers of two, three, and seven years' standing by cutting the surrounding varices which prevented consolidation. The first of these operations performed at Naples made me a criminal in the eyes of the governor and house staff of the hospital." He healed many such ulcers, noting the relief of pain in the distal parts as well as subsidence of inflammation, so that "the area returns to its natural



MARCUS AURELIUS SEVERINUS

condition as soon as one cuts the surrounding network just as a plant dries up when one cuts off the water which moistens it."

He secured an excellent result in a man with an ulcer whose leg was riddled with varices by having suppuration develop in a large varix, which he incised and cauterized in the groin. The subsequent thrombosis of the tortuous veins in the thigh and leg with the healing of the ulcer led to the cure of the man.

NEW TREATMENT FOR HERNIA

He described a new treatment for hernia, giving the details as follows: "One must have a large needle threaded with very strong new silk one foot long, a little ivory or bone plate, rectangular in shape and about one inch in thickness; also such plasters and poultices as may be necessary. In the morning the patient is laid on his back and the intestines pushed up and back, after the parts have been shaved. The scrotum is stretched until the skin of the groin is taut and the patient breathes restrainedly and is warned against crying out. With the left hand the surgeon takes hold of the membrane, pushing back the hernia so that it does not descend, and with the right hand identifies the spermatic vein which goes to the testicle. He then passes the needle, dipped in oil, so as to include all the membranes and skin near the vein but without including it. The little ivory plate is also included in the thread, which he ties in such a way that it is flat on the skin without involving any other part of the scrotum, and with the precaution that the two testicles are

outside of the knot. Every day the plate is turned once or twice like a tourniquet so that it becomes tightened gradually from all sides and little by little it cuts the skin and membrane and enlarges the hole toward the testicle where pus forms. At the same time the area which has been stretched or dilated by the hernia becomes fibrosed by the application of compresses and poultices and in the meantime within ten to fifteen days, the thread has completely severed the tissues contained in it. Precautions must be taken to allow a good cicatrix to form and to harden into a callus, taking care that there is no relaxation in the new scar which would favor recurrence. By this method there is no fear that the veins will open." Is it any wonder that the people gave him an opportunity to call them "cowardly and soft"?

In the long series of chapters Severinus discusses and illustrates by cases the treatment of plagues, ulcers, tumors, adherent eyelids, strictures, laryngotomy, umbilical hernia, hypospadias, phimosis, imperforate hymen, simple fistulae, spreading whitlow, herpes and other types of ulcers, obstinate cicatrix, bite of mad dog, polyps, condyloma, corns on foot, nymphotomy, ingrowing nails, amputations and sections of nerves, muscles and tendons and their suture.

OPERATIONS ON THE SKULL

The last chapter deals with trephining, which was in use at that time for simple migraines, for mania, or for diseases of the eyes. Severinus successfully eradicated a so-called fungus tumor of the dura mater from the Spanish nobleman Avalos, who was afflicted with intolerable headaches which no remedy could appease. It was proposed to the patient to trephine the cranium, an operation to which he consented. This proceeding brought into view under the bone a "fungous excrescence," the destruction of which proved a permanent cure of the violent pains which the disease had occasioned. Is it possible that this was the first successful extirpation of a brain tumor?

The apparent boldness and daring of Severinus was emphasized by the general timidity of the surgeons of his day and he boastfully records feats of successful surgery which, in another age, would have been most simple. He was well read in the Greek-Arabian surgery and used the actual cautery extensively. Born in 1580 he died of the plague in 1656, a year before the death of Harvey.

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CLINICAL NOTES, CASE REPORTS AND NEW INSTRUMENTS

THEOPHYLLIN-ETHYLENEDIAMIN FOR CARDIAC PAIN*

REPORT OF CASES

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SELF-PRESERVATION is one of man's primal instincts, and pain is perhaps the most prominent sensation which calls this instinct to the fore. Perhaps it is this combination which gives pain in so vital an organ as the heart its terrifying character. Or perhaps, thinking behavioristically, it may be merely the reaction of the autonomic nervous system without conscious cerebration. Whatever the cause, pain of cardiac origin is of great importance to the clinician.

Of the drugs used for the relief of this symptom, perhaps the nitrites and the xanthin derivatives are the most often used. The peripheral vasodilating action of the nitrites is transitory, the longest effect being obtained from erythrol tetranitrate, which has the disadvantage of causing severe headaches. The real rôle of the nitrites is the lowering of a high blood pressure when an apoplexy seems imminent, or in the actual attack of angina pectoris.

The xanthin derivatives, more specifically, caffeine, theobromin, theophyllin and their salts, also bring about a peripheral vascular relaxation, but the organs most affected vary with the drug used. Caffeine exerts more a central (cerebral and medullary), theophyllin a peripheral, effect, and theobromin is intermediate. Theophyllin has the strongest renal and coronary vascular effect,⁵ and is of some use in the treatment of the conditions causing cardiac pain, but in the main it is disappointing. Theominal, a combination of theobromin and luminal, is better, but this also often disappoints. Luminal, much used in hypertension cases, also has a peripheral vascular dilating action.

Although mention of theophyllin-ethylenediamin, or euphyllin, was made in the literature at least as early as 1908,¹ only comparatively recently has it received any appreciable notice in the American literature. Recently, Musser² said that euphyllin action is apparently due to the theophyllin content alone, yet he also says that, of all the xanthin group, theophyllin-ethylenediamin possesses the greatest coronary-dilating power. Guggenheimer⁴ states that the action of euphyllin is explained by "a considerable acceleration of the flow of blood, even by the ethylenediamin component alone." Smith, Miller, and Graber⁶ state that euphyllin increases the perfusion rate of the

* Since the above was written, the trade name has been changed from euphyllin to metaphyllin.